

**FREQUENCY SELECTIVE SURFACES AND PHASED ARRAY  
ANTENNAS USING FLUIDIC DIELECTRICS**

**ABSTRACT**

A phased array antenna (100) having a frequency selective surface comprises a substrate (125) and an array of antenna elements (140) thereon. Each antenna element comprises a medial feed portion (42) and a pair of legs (49) extending outwardly therefrom. Adjacent legs of adjacent antenna elements include respective spaced apart end portions (51). The antenna further comprises at least one fluidic dielectric residing within at least one cavity (170) within the substrate and arranged between a plane where the array of dipole antenna elements reside and a ground plane (150), at least one composition processor (104) adapted for dynamically changing a composition of said fluidic dielectric, and a controller (102) for controlling the composition processor to selectively vary at least one of a permittivity and a permeability of the fluidic dielectric in at least one cavity in response to a control signal (105).